USDA
NATURAL RESOURCES
CONSERVATION SERVICE
MARYLAND

CONSERVATION PRACTICE
STANDARD

HEAVY USE AREA PROTECTION

CODE 561
(Reported by Ac.)

DEFINITION

Protecting heavily used areas by establishing vegetative cover, by surfacing with suitable materials, or by installing needed structures.

PURPOSE

To stabilize urban, recreation or agricultural facility areas frequently and intensely used by people, animals, or vehicles.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies on urban, agricultural, and recreation areas or other frequently and intensely used areas that require special treatment to protect them from erosion or other deterioration. (Does not apply to Critical Area Planting (342), Recreation Area Improvement (562), or to Waste Storage Facility (313).

CONSIDERATIONS

Consideration will be given to the location, distance, and gradient to streams, sinkholes, drainage ways, and well heads; depth to bedrock; aquifer flow characteristics; traffic patterns; density; type of maintenance equipment; proximity to neighbors; prevailing winds; visual effects; and operation and maintenance costs. The stabilizing material should be selected considering the intended use, desired maintenance frequency, and runoff control.

Water Quantity

1. Effects on the water budget, especially on volumes and rates of runoff, infiltration, and transpiration need to be considered.

Water Quality

The following effects on water quality must be considered when planning a heavy use area protection.

1. Effects on erosion and the movement of sediment, animal waste, and soluble and sediment-attached substances carried by runoff.

2. Effects of changes in surface and ground water caused by introduction of fertilizers for vegetated areas, and oils and chemicals associated with concrete and asphalt placement and other construction activities.

3. Effects of changes in surface water quality caused by the surfacing of confined animal feeding areas.

CRITERIA

Concentrated Livestock Areas

General - This practice is intended to be a component of a Waste Management System Plan (312), which addresses all practices needed to improve water quality from areas being frequently and intensively utilized by livestock.

Field Investigation - A full investigation of the topography of the site, soil conditions, farming operations, erosion, water quality and degree and type of usage shall be made before a specific plan is prepared for the area.

Drainage and Erosion Control - Provisions shall be made for surface and subsurface

drainage, as needed, and for disposal of runoff without causing erosion or other water quality problems.

Fencing - Follow Fencing (382) specifications for perimeter and interior fencing. Fencing shall be used to keep livestock from buffer areas, stream, waterways, or other areas as planned in the Waste Management System Plan.

Runoff Treatment - Surface runoff will be controlled to minimize overland flow onto, and through, the heavy use area by the use of diversions, grassed waterways, lined waterways, underground outlets, or roof runoff management. Runoff from the area shall be contained in a Waste Storage Structure (313) or treated in a method compliant with the Waste Management System Plan (312).

Paved Area Sizing - Where cattle are confined and have access to a protected loafing area (i.e. barn or shelter), 40 to 60 sq. ft. per animal unit is recommended.

Where cattle are confined and do not have access to a protected loafing area, 95 to 135 sq. ft. per animal unit is recommended.

Where the area is being used as a cattle-feeding pad only, 40 to 60 sq. ft. per animal unit is recommended. Limited confinement is acceptable.

When evaluating areas adjacent to existing paved areas, consideration must be given to the combined sizing of the existing paved area and the additional proposed paved area. The sizing limits shown should be a combination of both paved areas.

Where other livestock are involved, consult appropriate literature or expertise for sizing.

Surface Treatment – The type of material is to be planned consistent with loading, uses and exposure of the area using one of the following:

1. **C*oncrete*** – Thickness shall be minimum 4" for cattle loading only, or 5" where equipment loading is expected. Concrete to be 4000 psi with 6x6 6/6 gage welded wire mesh reinforcing.
2. ***Asphalt*** – The thickness shall be 4" of surface band SF. The kind and size of aggregate, type and proportioning of bituminous materials, and the mixing and placing of these materials shall be in accord with the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 504.
3. ***Gravel*** – Surface shall consist of placement of synthetic ground stabilization fabric, 6" of MSHA #2 stone with a 1" surface layer of MSHA CR-6 stone. Other gravel options will be considered.
4. ***Base Course*** - All areas to be paved shall have a 5-inch base course of gravel, crushed stone, or other suitable materials. The material in place may be used if it is adequate. A Class C geotextile as specified in the *Maryland Standards and Specifications for Soil Erosion and Sediment Control* shall be used for soil separation if necessary.
5. ***Other - Mechanical*** - Where other surfacing materials are used, such as cinders, tanbark, sawdust, etc., the minimum thickness shall be 4 inches and shall be renewed as animals remove the surface.

Vegetative Measures – All areas disturbed by the construction will be stabilized immediately in accordance with Critical Area Planting (342).

Grass Loafing Lot Sizing - Where disturbed exercise lots are being improved for water quality purposes, establish a minimum of three grass paddocks and sacrifice area as follows:

1. Loafing paddocks are to be sized at no smaller than one acre per twenty cows. More cows per acre may be considered if four or more paddocks are planned.
2. An unpaved sacrifice area shall be established and sized at 750 sq. ft./animal unit.
3. Avoid slopes that are less than 3% or greater than 8%.

4. Seed lots following Critical Area Planting (342) specifications.

5. Develop an operation and maintenance plan which addresses field rotation, use of sacrifice areas, fencing patterns, access roads, etc.

6. Provide a water supply that protects water quality.

7. Fence cattle from all streams and concentrated flow areas such as drainage ways and sinkholes.

8. Provide field filter strips in accordance with Filter strip (393) for all grassed and sacrifice areas.

9. Maintain a minimum 24-foot grass buffer between grassed loafing lots, streams, and drainage ways. This buffer shall be designed in accordance with the Filter Strip (393) standard, or otherwise divert the polluted runoff or storage facilities, constructed wetlands, or any combination of these and/or other practices that provide effective treatment of contaminants.

10. Concentrated flow will be treated and be in compliance with the Waste Management System Plan (312).

Travel Lanes, Watering & Sacrifice Areas

The following shall be addressed in these areas:

1. Raise areas to provide good drainage.

2. Divert clean surface water from sacrifice areas and watering facilities.

3. Clean water shall be diverted away from Heavy Use Areas, to the fullest extent practical, to a safe and stable outlet.

4. The surface material should be selected considering the animal type, desired maintenance frequency, and runoff control. Concrete and asphalt provide the most maintenance free surface. Use geotextile as needed for soil separation

5. Crown or super elevate travel lanes for good drainage.

6. Do not pave areas that are on a slope greater than 8%.

7. Surface Treatment shall follow that shown in the section, *Concentrated Livestock Areas.*

8. Fencing shall follow that shown in the section, *Concentrated Livestock Areas.*

9. Concentrated flow and other areas that impact water quality will be treated and be in compliance with the Waste Management System Plan (312).

Other Areas

General - This practice is intended to stabilize intensely used areas such as roadways, trails and parking lots.

Drainage and Erosion Control - Provisions shall be made for surface and subsurface drainage, as needed, and for disposal of runoff without causing erosion.

Surface Treatment – Areas that support vehicular traffic shall be designed for a wheel load of at least 4,000 lbs. The type of surface treatment should be selected considering the intensity of use, type and level of maintenance that will be provided.

1. ***Asphalt*** - The thickness of the asphalt course, the kind and size of aggregate, type and proportioning of bituminous materials, and the mixing and placing of these materials shall be in accord with good highway practice for the expected loading and in accord with sound engineering practice.

2. ***Concrete*** - The quality and thickness of concrete and the spacing and size of reinforcing steel shall be appropriate for the expected loading and in accord with sound engineering practice.

3. ***Gravel*** - Minimum thickness for gravel surface shall be 2 inches.

4. ***Base Course*** - All areas to be paved shall have a 5-inch base course of gravel, crushed stone, or other suitable materials. The material in place may be used if it is adequate. A Class C geotextile as specified in the *Maryland Standards and Specifications for Soil Erosion and Sediment Control* shall be used for soil separation if necessary.

5. ***Other - Mechanical*** - Where other surfacing materials are used, such as cinders, tanbark, sawdust, etc., the minimum thickness shall be 2 inches.

6. ***Sprays and Artificial Mulches*** - Sprays of asphalt, oil, plastic, manufactured mulches and similar materials will be installed in accordance with the manufacturer recommendations.

Structures - All structures shall be designed according to appropriate NRCS standards and specifications or Engineering Handbook recommendations.

Vegetative Measures - Liming, fertilizing, seeding, and sodding shall be according to the planned use and Code 342 - Critical Area Planting. If vegetation is not appropriate, other measures shall be used to prevent erosion.

OPERATION AND MAINTENANCE

1. Inspect Heavy Use Area twice a year, minimum.

2. Scrape surface as needed to remove excess manure and/or sediment.

3. Repair paved areas by replacement of lost gravel, repaving holes, and regrading paving materials.

4. Repair any deteriorating areas.

5. Maintain all vegetation that is part of the plan by fertilization and liming according to soil test recommendations and reseeding or replanting as necessary.

6. Inspect inlets and outlets of pipes and culverts and remove any obstructions present.

SPECIFICATIONS

Specifications for Heavy Use Area Protection shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

1. Unless otherwise specified, each phase of construction operations required for "Heavy Use Area Protection" shall comply with the appropriate Standard or Construction Specification for the work item as contained in the technical guide, including, but not limited to:

   a. Clearing

   b. Clearing and Grubbing

   c. Structure Removal

   d. Earth Fill

   e. Concrete

   f. Pipe Conduits

   g. Corrugated Plastic Tubing

2. Personnel with appropriate NRCS engineering approval authority shall inspect all materials. Materials must conform to the material specifications.

3. Construction operations shall be carried out in a manner such that erosion, air, and water pollution will be minimized and held within legal limits.

4. Required smoothing, grading, or leveling shall be completed prior to the start of surfacing operations. The subgrade shall be compacted as necessary to attain a firm foundation for the surfacing materials.

5. Hot bituminous surfacing materials shall not be placed on a wet subgrade.

6. All components of the completed structure shall comply with cross-sections, lines, grades, dimensions, and material specifications shown on the plans.

7. Steel reinforcement shall be formed, located, spliced, and lapped as specified on the construction drawings.

8. Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

9. Backfill material shall be granular and shall be compacted by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. It shall be placed to the height or elevations, lines, and slopes shown on the construction plans.

10. All disturbed areas shall be fertilized, seeded, and mulched or otherwise stabilized as required on the construction plans.

11. When required, geotextile shall be Class C as specified in the *Maryland Standards and Specifications for Soil Erosion and Sediment Control*.

SUPPORTING DATA AND DOCUMENTATION

Field Data and Survey Notes

1. Plan view of area disturbed with dimensions as appropriate.

2. Profiles of the area disturbed showing grades and thickness of the base course and surface treatment as appropriate.

3. Soils investigation documenting soil texture, depth to high water table and permeability of the soil.

4. Documentation of discussions / decisions made with operator / owner.

Design Data

Record on appropriate engineering paper. The following is a list of the minimum required design data:

1. Waste Management System Plan (312), when animals are involved.

2. Profiles of the area disturbed showing grades and thickness of the base course and surface treatment as appropriate.

3. Description of surface treatment (with material description).

4. Runoff treatment design.

5. Area grading plan.

6. Seeding, liming, fertilizing, and mulching requirements if seeding is specified.

7. Quantities.

8. Written O & M Plan.

Construction Check Data/As-Built

1. Installation and construction check notes are to be recorded in sufficient detail to show that the practice meets this standard and applicable specification. Minimum requirements are:

   a. Measurements to show length, width, and grades of completed area protection marked in red on the "as-built" plans.

   b. Statement as to the materials installed and thickness, to be placed on the "as-built" plans.

   c. The certification statement and approving signature on the "as-built" plans.

2. Measurements of extent are to be limited to the determination of practice units performed.

3. If appropriate state/local authorities approve urban erosion and sediment control plans, no additional documentation is necessary.

REFERENCES

1. *Maryland Technical Guide*, Section IV, Conservation Practice Standards

2. *National Handbook of Conservation Practices*, USDA, Soil Conservation Service.

3. *Standard Specifications for Construction Materials*, Maryland Department of Transportation, State Highway Administration, Baltimore, Maryland, October 1993.

4. *1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control*, Maryland Department of the Environment, Water Management Administration.